Data Sheet

Ultrastar® 7K6000

3.5-Inch Enterprise 7200 RPM Hard Disk Drives

Highlights

- Best-in-class random & sequential performance
- Reliable, field-proven, 7th generation 5-disk design
- Compared to prior generation 7K4000
  - » 50% more capacity[1] (6TB vs. 4TB)
  - » 30% better power efficiency (Watts/TB)
  - » Up to 3X faster random write performance using media cache technology
  - » 25% faster sequential read/write performance
- 12Gb/s SAS and 6Gb/s SATA for compatibility with high performance data centers
- 128MB cache buffer improves response time and data management
- Secure erase & Self-Encrypting Drive (SED) options
- Advanced format 4Kn and 512e models
- 2M hours MTBF[2] rating & 5yr limited warranty

Applications/Environments

- Cloud & Hyperscale storage
- Distributed Files Systems like Ceph™ and Hadoop® to support Big Data Analytics
- Video surveillance & content distribution
- Direct & Network Attached Storage (DAS & NAS)
- RAID arrays
- Massive scale-out data centers (MSO)

6TB, 5TB, 4TB and 2TB | 7200 RPM
SATA 6Gb/s and SAS 12Gb/s

ADVANCED 4Kn FORMAT

ADVANCED AF FORMAT

EcoTrac

Increasing Capacity Density by 50%

As petabyte (PB) growth continues to increase at a rapid pace, corporate and cloud data centers are under extreme pressure to improve the efficiency of storage. To address this data center challenge, HGST introduces Ultrastar® 7K6000, delivering up to 6TB of capacity in an industry-standard, 3.5-inch hard drive, for capacity-optimized enterprise applications. Ultrastar 7K6000 provides 50% more capacity and 30% better power efficiency in terms of Watts per terabyte (W/TB) than its predecessor, Ultrastar 7K4000. The 7K6000 is designed for all traditional and rapidly growing scale-out storage applications, including object, block and file storage architectures, providing huge capacity, the fastest 7,200 RPM performance and the best $/TB acquisition cost.

Technology Innovation Improves Storage Efficiency

Ultrastar 7K6000 also delivers greater storage efficiency through best-in-class performance, achieving up to 3X higher random write performance, thanks to HGST media cache architecture, a disk-based caching technology, which provides a large non-volatile cache on the disk. Media cache also allows for improved reliability and data integrity during unexpected power loss. Other performance-enhancing features include higher areal density for 25% faster sequential performance vs. 7K4000, and a 128MB cache buffer. The 7K6000 offers a 12Gb/s SAS (6Gb/s SATA) interface for easy integration into high performance data centers. As drive capacities increase, so does the time required to recover a failed drive in a RAID configuration. Dramatically reduce RAID rebuild times and maintain system performance during the rebuild process with the new Rebuild Assist. Learn more in our Rebuild Assist technical brief.

Data Security with Industry-Leading Quality, Reliability

Compliance and privacy requirements drive the need for increased data security. Ultrastar 7K6000 helps protect data from unauthorized use by offering security and encryption options. Instant Secure Erase (ISE) models expedite drive redeployment and retirement. Encryption models protect data with hardware-based encryption, including a Trusted Computing Group (TCG) Enterprise_A, TCG with FIPS 140-2 certification, Level 2. The Ultrastar 7K6000 is a seventh generation, 5-platter design, field proven by top server and storage OEMs, and Internet giants, and extends HGST's long-standing tradition of reliability leadership with a 2M-hour MTBF rating and a 5-year limited warranty.

Features and Benefits

	Feature / Function	Benefits
Capacity	6TB, 5TB, 4TB, and 2TB	Represents 50% more capacity than prior generation for lower TCO in the data center
	Advanced Format	Enables higher capacities
Power Efficiency	30% lower Watts per terabyte (W/TB)	Improved power efficiency compared to prior generation
Performance	Increased Areal Density (Gbits/sq. in)	Enables 25% higher sequential performance (6TB) vs. prior generation Ultrastar 7K4000
	Media cache architecture	Up to 3X better random write performance vs. prior generation
	Rebuild Assist mode	Reduces rebuild time for a failed drive and maintains system performance during rebuild in a RAID configuration
	SAS 12Gb/s and SATA 6Gb/s	Provides compatibility and easy integration with high-performance data centers
	Rotational Vibration Safeguard (RVS)	Maintains drive performance in high rotational vibration environments and multi-drive systems
Reliability	2.0M hours MTBF	Industry's highest reliability rating for Capacity Enterprise hard drives
	5-year limited warranty	Industry's best for enterprise-class hard drives
Data Security	Instant Secure Erase	Enables swift and efficient drive redeployment and retirement
	Optional Bulk Data Encryption (SATA) & TCG Enterprise_A (SAS)	Hardware-based encryption protects data from unauthorized use

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HGST Quality and Service

HGST's Ultrastar 7K6000 extends the company's long-standing tradition of performance and capacity leadership. The proven drive design enables high reliability and availability to customer data. Ultrastar quality, performance and world class technical support and service provides customers with a lower total cost of ownership over previous generations.

HGST drives are backed by an array of technical support and services, which may include customer and integration assistance. HGST is dedicated to providing a complete portfolio of HDD/SSD solutions to satisfy today's monumental computing needs.

How to read the Ultrastar model number

HUS7260xxAL4210 = xTB, 4Kn SAS 12Gb/s

H = HGST
U = Ultrastar
S = Standard (vs. C for Compact)
72 = 7200 RPM
60 = Full capacity — 6TB
xx = Capacity this model
  60 = 6TB
  50 = 5TB
  40 = 4TB
  20 = 2TB
A = Generation code
L = 26.1mm z-height
42 = Interface, 4Kn SAS 12Gb/s
  52 = 512e SAS 12Gb/s
  E6 = 512e SATA 6Gb/s
  N6 = 4Kn SATA 6Gb/s
1 = 128MB buffer
y = Data Security Mode
  0 = Instant Secure Erase
  1 = Bulk Data Encryption (SATA), TCG SED encryption (SAS)
  4 = Secure Erase (overwrite only)
  5 = TCG encryption with FIPS (SAS)

Information and Technical Support

www.hgst.com (Main Web site)
www.hgst.com/support (Support Web site)

Program Support

Partners First Program: channelpartners@hgst.com
www.hgst.com/partners (Partners Web site)

Specifications

Model # *NOTE: See "How to read the Ultrastar model number" at left for possible values of xx and y.*	HUS7260xxALN61y HUS7260xxALE61y	HUS7260xxAL421y HUS7260xxAL521y
Configuration		
Interface	SATA 6Gb/s	SAS 12Gb/s
Capacity (TB)[1]	6TB / 5TB / 4TB / 2TB	←
Sector size (bytes)[3]	4Kn: 4096, 512e: 512	4Kn: 4096, 4112, 4160, 4224 512e: 512, 520, 528
Max. areal density (Gbits/sq. in)	703 (6TB), 599 (<6TB)	←
Performance		
Data buffer (MB)[4]	128	←
Rotational speed (RPM)	7200	←
Latency average, (ms)	4.16	←
Interface transfer rate (MB/s, max)	600	1200
Sustained transfer rate[5] (MiB/sec, typ.) (MB/sec, typ.)	 216 (6TB), 192 (<6TB) 227 (6TB), 202 (<6TB)	 ← ←
Seek time (read/write, ms, typical)[6]	7.6 / 8.0	←
Reliability		
Error rate (non-recoverable, bits read)	1 in 10^{15}	←
Load/Unload cycles (at 40°C)	600,000	←
MTBF[1] (M hours)	2.0	←
Availability (hrs/day x days/wk)	24x7	←
Warranty (yrs)	5	←
Acoustics		
Idle/Operating (Bels, typical)	2.9 / 3.6	←
Power		
Requirement	+5V, +12V	←
Operating (W, typical)[7]	9.1	11.0
Idle (W)[8]	7.1	7.7
Power consumption efficiency at idle (Watts/TB) (Watts/GB)	 1.2 (6TB) 0.0012 (6TB)	 1.3 (6TB) 0.0013 (6TB)
Physical size		
z-height (mm, max)	26.1	←
Dimensions (width x depth, mm)	101.6 (+/-0.25) x 147	←
Weight (g, max)	715	←
Environmental (operating)		
Ambient temperature	5° to 60° C	←
Shock (half-sine wave 2 ms, G)	70	←
Vibration (G RMS, 5 to 500 Hz)	0.67 (XYZ)	←
Environmental (non-operating)		
Ambient temperature	-40° to 70° C	←
Shock (half-sine wave, 1ms, G)	300	←
Vibration (G RMS, 5 to 500 Hz)	1.04 (XYZ)	←

[1] One MB is equal to one million bytes, one GB is equal to one billion bytes and one TB equals 1,000GB (one trillion bytes) when referring to hard drive capacity. Accessible capacity will vary from the stated capacity due to formatting and partitioning of the hard drive, the computer's operating system, and other factors.
[2] MTBF target is based on a sample population and is estimated by statistical measurements and acceleration algorithms under nominal operating conditions. MTBF ratings are not intended to predict an individual drive's reliability. MTBF does not constitute a warranty.
[3] Advanced Format drive: 4K (4096-byte) physical sec
[4] Portion of buffer capacity used for drive firmware
[5] MiB/s is 2^{20} bytes, MB/s is 10^{6} bytes
[6] Excludes command overhead
[7] SATA models: 8K Queue Depth = 1, SAS models: 4K Queue Depth = 4
[8] Idle specification is based on use of Idle_A

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The EcoTrac symbol identifies HGST hard drives that deliver on the principles of lower operating costs, safer product disposal and a more sustainable environment.

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Product specifications provided are sample specifications and do not constitute a warranty. Information is true as of the date of publication and is subject to change. Actual specifications for unique part numbers may vary.

Please visit the Support section of our website, www.hgst.com/support, for additional information on product specifications. Photographs may show design models.

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